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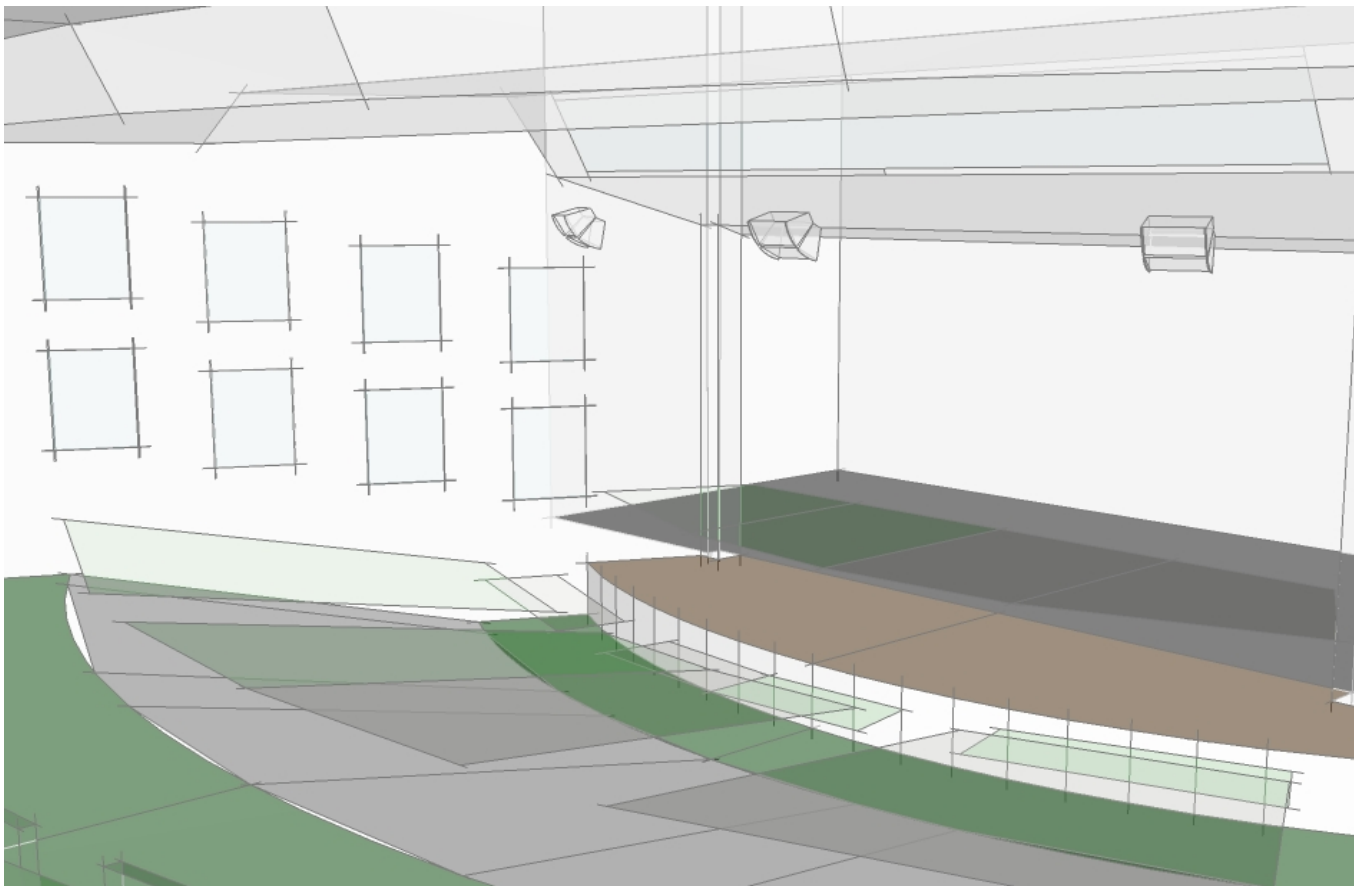
# Array Application Guide

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A Guide to Assist in the Specifying of JBL Application Engineered™  
Series Products  
With Pre-Designed Arrays, Array Optimization Tips, Room Examples,  
and more

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## Introduction

This edition of the *Array Application Guide* focuses on how **Application Engineered™** Series loudspeakers can provide the building blocks to construct arrays that will offer exceptional coverage in a wide range of room sizes and applications.

The arrays in this guide, as in earlier editions, are categorized by configuration and orientation. These configurations help emphasize the versatility of the AE Series loudspeakers as the arrays are upgraded in terms of power handling and pattern control. General performance information including frequency range, nominal coverage, SPL capability, size, and weight are provided for each array.

Several of the arrays utilize the available PAF Planar Array Frame hardware for use when applications call for overhead suspension. A further description of this hardware can be found in the JBL publication: *AE Series Bracket and Array Frame Handbook* available on the JBL Professional website.

The AM4212, AM4215 and AM6212 and 6215 mid and high-power models have been replaced by the new **AM5212**, **AM5215** and **AM7212** and **AM7215** Series models. These new models feature identical enclosure dimensions but offer two additional horn patterns – 60° x 60° and 120° x 60° – for additional flexibility in addressing your design challenges. With the addition of the newer generation Differential Drive® woofers additional weight reductions are also realized; up to 33lbs (15kgs) on some of the larger arrays.

The AM4315/64, AM4315/95, AM6315/64 and AM6315/95 have been replaced by the **AM7315/64** and **AM7315/95**. The AM4200/64, AM4200/95, AM6200/64 and AM6200/95 have been replaced by the **AM7200/64** and **AM7200/95**. The AM6340/64 and AM6340/95 have been discontinued. The AL6115 is replaced by the **AL7115** and the AL6125 has been discontinued.

The **AE Compact Series** products, new to the JBL Pro line since the last edition, can easily be integrated into larger AE Series system designs to address areas such as under balcony, front stage lip fill, rear delay zones and other audience zones where a larger AE Series enclosure is not required. Additional information can be found on the JBL Professional website under Installed Sound Products.

Also new to the AE family are five additional **AE Series** subwoofer enclosures. These models include ultra compact 12" and 15" models, a dual 15" model, and two high-output 18" models in both single and dual component models. These new enclosures feature side rigging points at both the front and rear of the enclosure to facilitate easy enclosure suspension when configuring vertical arrays or rear firing elements in a flown cardioid subwoofer arrangement. Additional notes on cardioid subwoofer set-up can be found in the 'Array Tips' section. This easy and proven method of arranging subwoofer enclosures will assist the designer in minimizing rear projected on-stage levels and controlling low frequencies throughout the room.

Although each room and project has its own demanding set of circumstances, we hope this Array Guide provides an outline for understanding the wide variety of effective solutions that are possible with the **AE Series** of JBL Professional loudspeakers.

## **Suspending Loudspeaker Arrays**

### **IMPORTANT SAFETY WARNING!**

The information in this section has been assembled from recognized engineering data and is intended for informational purposes only. None of the information in this section should be used without first obtaining competent advice with respect to applicability to a given circumstance. None of the information presented herein is intended as a representation or warranty on the part of JBL. Anyone making use of this information assumes all liability arising from such use.

All information presented herein is based upon materials and practices common to North America and may not directly apply to other countries because of differing material dimensions, specifications, and/or local regulations. Users in other countries should consult with appropriate engineering and regulatory authorities for specific guidelines.

Correct use of all rigging hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their working load limits before the array is suspended. Never exceed the maximum recommended load ratings.

Before suspending any speaker system always inspect all components (enclosure, rigging frames, pins, eyebolts, track fittings, etc.) for cracks, deformations, corrosion, missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend the speaker until the proper corrective action has been taken. Use only load-rated hardware when suspending Application Engineered™ Series and Precision Directivity® Series loudspeakers.

### **Are You New to Loudspeaker Suspension?**

If so, you should do the following:

- Read and study JBL Technical Note Volume 1, Number 14: Basic Principles for Suspending Loudspeaker Systems (available at [http://www.jblpro.com/pub/technote/tn\\_v1n14.pdf](http://www.jblpro.com/pub/technote/tn_v1n14.pdf)).
- Know the rules for the safe overhead suspension of loudspeakers.
- Attend a seminar, such as those recognized and recommended by the **Entertainment Technician Certification Program** - [http://etcp.esta.org/cert\\_recognized/training\\_programs/rigging\\_list.htm](http://etcp.esta.org/cert_recognized/training_programs/rigging_list.htm)
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of guessing about their answers. Learn from what they tell you.
- Meet and discuss this aspect of your business with your Insurance Agent.
- Research and understand the codes, practices, and requirements in the venues where you intend to install and operate sound systems.

### **General Hardware Information**

Any hardware used in an overhead suspension application must be load rated for the intended use. Generally, this type of hardware is available from rigging supply houses, industrial supply catalogs and specialized rigging distributors. Local hardware stores do not usually stock these products. Hardware that is intended for overhead suspension will comply with ASME B30.20 and will be manufactured under product traceability controls. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code.

### **Attachment to Structures**

A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object. The following performance standards should be provided to the Professional Engineer for design purposes; Uniform Building Code as applicable, Municipal Building Code as applicable, and Seismic Code as applicable.

The installation of the hardware and method of attachment must be carried out in the manner specified by the Professional Engineer. Improper installation may result in damage, injury or death.

### **Inspection & Maintenance**

Suspension systems are comprised of mechanical devices and, as such, they require regular inspection and routine maintenance to insure proper function ability. JBL AE Series and PD Series loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual survey of all corners and load bearing surfaces for signs of cracking, water damage, de-lamination, or any other condition that may decrease the strength of the loudspeaker enclosure. Accessory rigging hardware provided with or for the JBL AE Series loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual survey of the material for signs of corrosion, bending or any other condition that may decrease the strength of the fastener. Additionally, any eyebolts shall be checked for possible spin-out from the enclosure. For all other hardware and fittings, refer to the hardware manufacturer's inspection and maintenance guidelines for process.

JBL is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, JBL is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse.

Prior to suspending the system, an expert, trained and experienced in suspending loudspeaker systems should inspect all rigging parts and components.

### **Safe Rigging**



#### **WARNING!**

**Suspending any loudspeaker system should be done by qualified persons following safe rigging standards.**

The JBL AE Series and PD6000 Series are supplied with built-in internal brackets. The system is designed to facilitate the suspension of the loudspeaker by a qualified person familiar with rigging hardware and industry practices. Threaded M10 shouldered eyebolts are available for purchase from JBL Professional (part # 229-00009-01) for use when suspending AE and PD Series enclosures utilizing this internal bracket system.

AE and PD6000 enclosures are capable of a maximum load of 470lbs/213kg from 2 points equally loaded. The single point maximum load is 235lbs/106kg. Improper installation may result in damage, injury or death. Prior to suspending the system, an expert, trained and experienced in flying speaker systems should inspect all rigging parts and components. A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object.

## Array Applications

The arrays described in this guide are developed to meet the performance goals of a wide variety of applications. Array recommendations are largely dictated by the intended function of the sound system along with the size and shape of the room. For this discussion we will divide the function of the sound system into three broad categories: Speech, Speech & Music, and High-Impact Music, and describe some typical solutions to three common room types. Referenced array types begin on page 16.

### Speech Systems

A speech-only system's primary function is to provide good intelligibility throughout the room. For these systems, there is more of a tendency to use a center cluster system or a more distributed approach since cost and evenness of coverage are generally driving factors in the design. Center clusters provide good localization to the talker. Delay fills improve gain before feedback and coverage, but at an increased cost. These systems are typically run in mono mode.

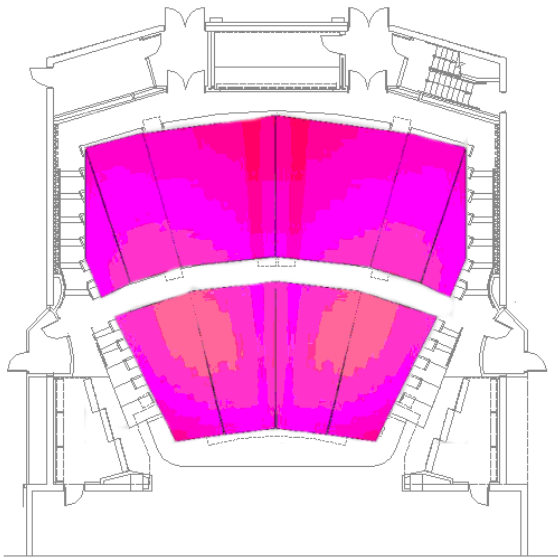


Figure 1: Array 5 (p. 20) as Center Cluster in a 60' deep theater showing +/-3dB averaged at 1-4 kHz.

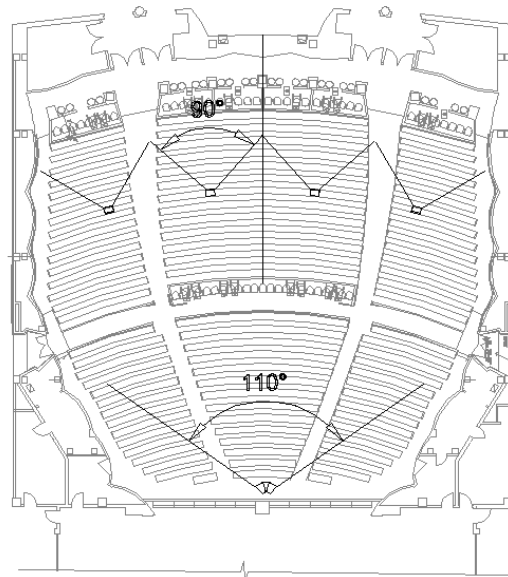


Figure 2: Array 12 (p. 25) as Center Cluster with AM5212 delay fill speakers in large auditorium

For small to medium sized rooms, Application Engineered™ two and three-way arrays are most appropriate. A simple single-tier solution such as array types 5 or 6 may be appropriate if the vertical coverage requirement is less than 60 degrees (see Figure 1). Larger rooms require higher SPL levels, better directivity, and usually a two-tiered array. In these cases, clusters that include the AM7315 will provide the required volume, impact levels and directivity to make these systems successful (see Figure 2).

For fan-shaped rooms or larger auditoriums, a three- or four-cluster system provides more consistent horizontal coverage and better localization to the stage. Systems designed primarily for speech should have as little overlap as possible between adjacent clusters. These systems can also improve coverage close to the stage (see Figures 3, 4 & 5).

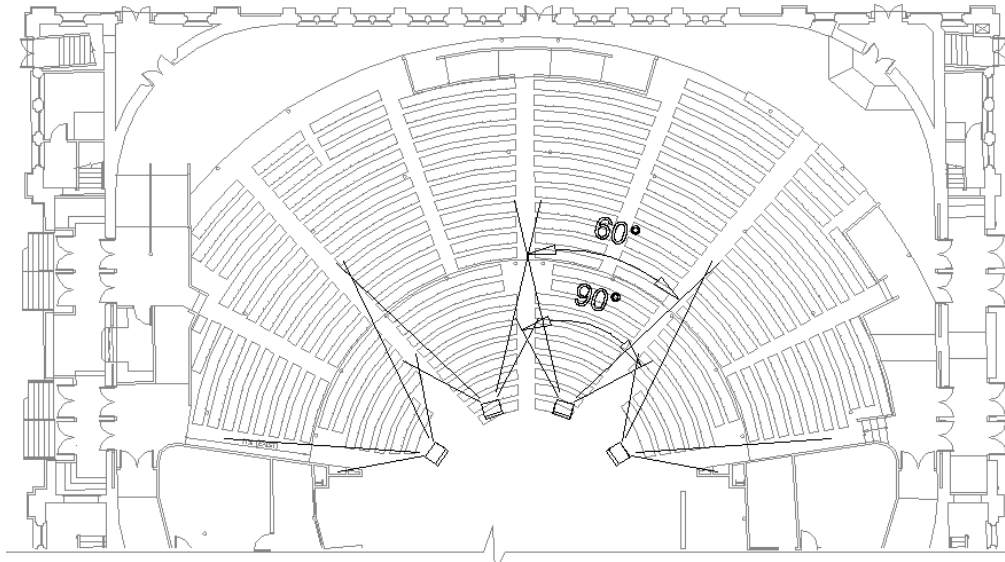


Figure 3: Array 14 (p. 27) used as an exploded cluster in a fan-shaped room

For larger center clusters arrays 10, 11, or 12 may be considered. For three- and four-cluster systems as described above (see Figure 3), the vertical arrays of rotated enclosures, arrays 13, 14, and 15, are particularly useful given their low profile and excellent polar characteristics. The stacked LF drivers of these arrays combine to increase LF power and directivity, greatly improving gain before feedback on lower performance areas.

## Combination Speech & Music Systems

A majority of sound reinforcement projects fall into this category. Here, all the elements associated with a successful speech system (evenness of coverage, consistent pattern control, and good intelligibility) need to be combined with a system that goes lower in frequency and provides greater impact. These systems benefit from a strong proscenium system to provide source localization to the stage and solid low-frequency support.

The preferred configuration of these systems is often an exploded arrangement, although other building constraints or preferences may dictate otherwise (see Figures 4 & 5). Clusters must provide good directivity to lower frequencies in order to provide evenness of coverage and improved system gain before feedback.

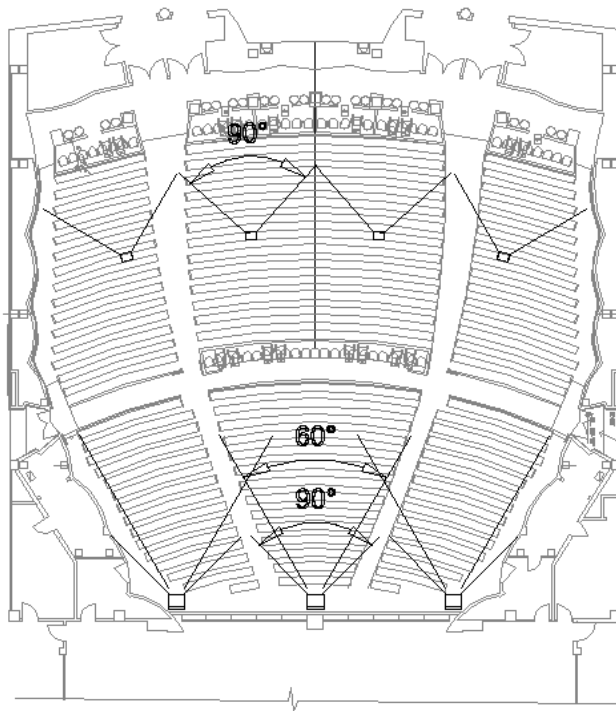


Figure 4: Array 15 (p. 29) with delay locations used in an exploded configuration in an auditorium

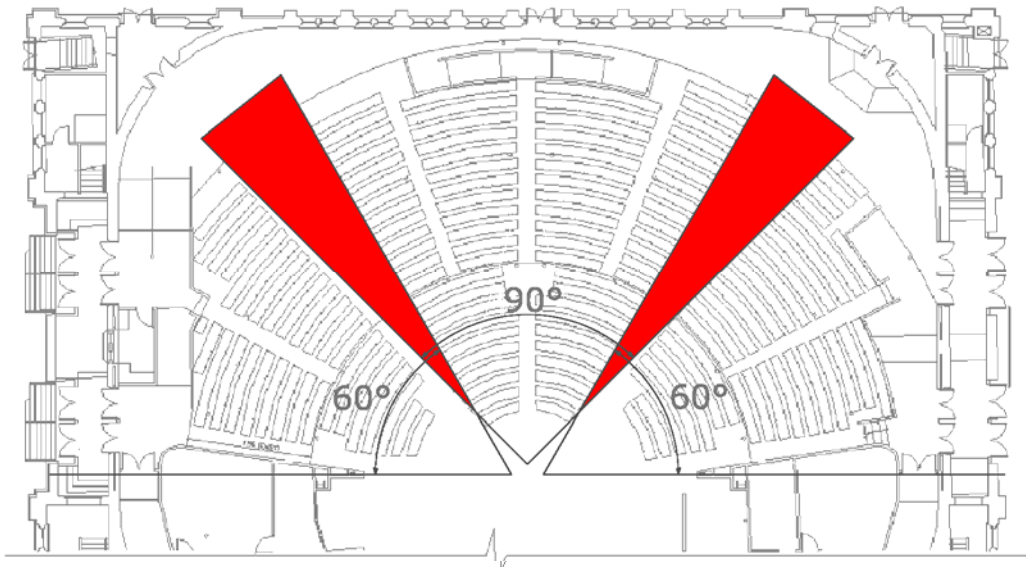


Figure 5: Array 15 (p. 28), with horn patterns shown, used in an exploded configuration. Red areas show minimal overlap.

Some of the array types described incorporate subwoofers integrated into the array; others do not. Subwoofers are often a requirement for systems requiring higher impact and low frequency extension and can always be flown adjacent to, behind the main array, or in a ground support configuration. Adding a smaller full range enclosure such as the **AC Compact Series** model AC28/95 on top of or near ground supported subwoofer locations will assist in the integration of these subwoofers for near listener positions.



## High-Impact Music Systems

While these systems are also sometimes used for speech, their primary purpose indicates that the arrays must produce high SPL Levels and have extended bandwidth by integrating subwoofers – whether flown or ground supported – into the system. Rectangular and auditorium shapes can have enhanced L/R only systems or exploded cluster systems – the center channel sometimes being optimized for speech. Fan-shaped rooms once again must use three- or four-cluster systems to provide proper coverage and localization to the stage.

Many of the Speech-only or Speech & Music scenarios described above may be used as a basis for a high-impact music system provided the SPL levels are high enough (>110dB in the seating area) and subwoofers are included in the system. Similarly, the array types described will generally be appropriate for this use if sized correctly for the room and properly augmented with subwoofers.

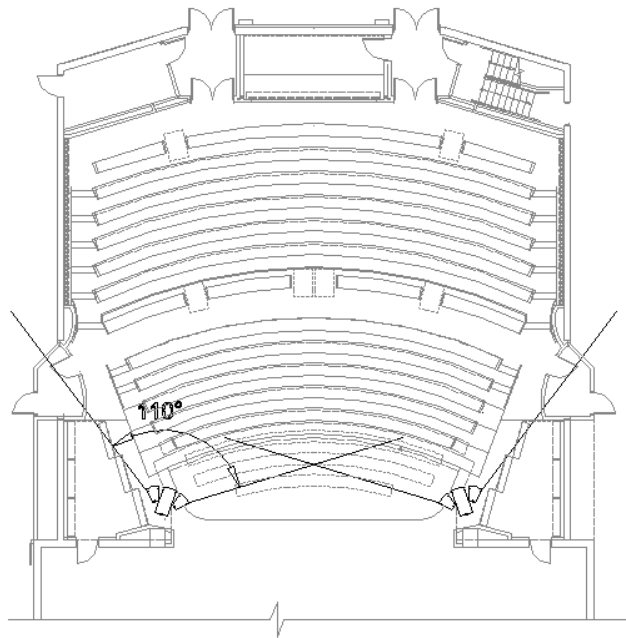


Figure 6: Array 12 (p. 25) used in a Right-Left configuration in a small theater

## Gymnasium Systems

Designing AE Series enclosures into a standard gymnasium facility is typically addressed by using horizontally oriented enclosures distributed along the width of the bleacher or seating areas. This approach will yield a better ratio of direct to reflected sound to the listeners ears than by using a center single cluster as the individual distributed enclosures will tend to cast much less energy onto far side wall surfaces than would be the case with a cluster aiming at a far seating area.

The JBL **MTU Series** U-brackets can often be used to more easily attach the enclosures to the structural steel or beam locations.

Depending on the height of the bleacher sections and associated vertical coverage requirements the horn may be left in its standard orientation with the enclosure rotated as mentioned above. With a  $60^\circ \times 40^\circ$  model this would allow the  $60^\circ$  pattern to cover the bottom to uppermost row when used with a short to medium height bleacher section. A  $60^\circ \times 60^\circ$  horn pattern can also be considered to reduce the required number of enclosures.

With taller or split level bleacher seating areas Arrays 13 & 14 will address the seating geometry better, using separate enclosures and amplifier channels to address lower and upper enclosure amplitude shading and E.Q. requirements.

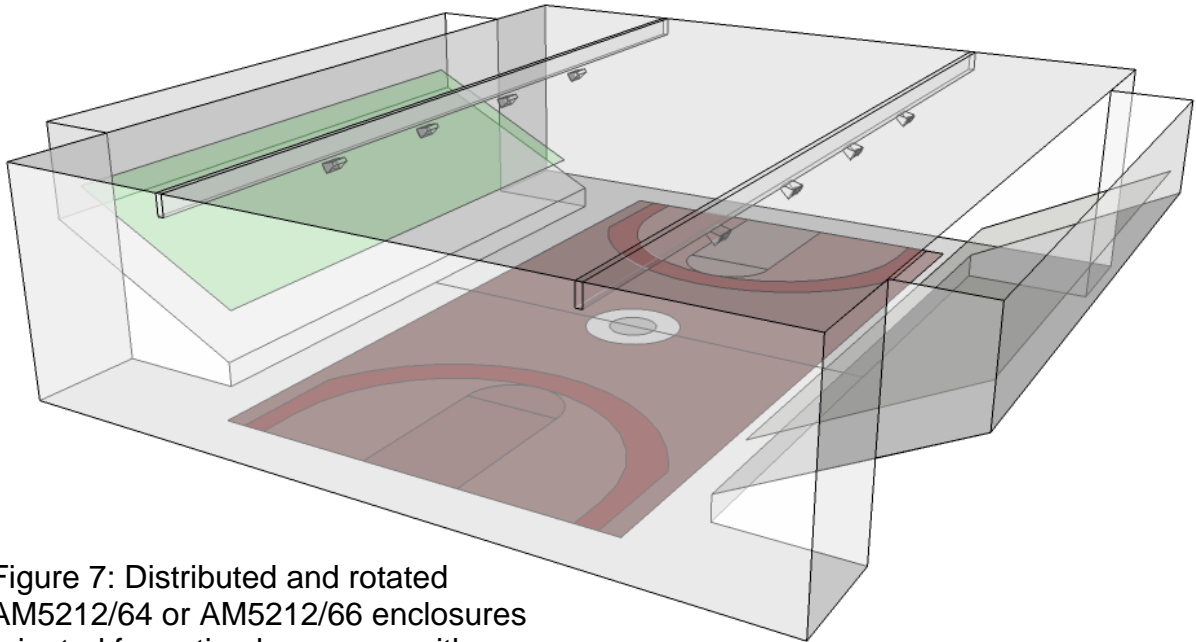


Figure 7: Distributed and rotated AM5212/64 or AM5212/66 enclosures oriented for optimal coverage with minimal wall interaction.

## Summary

These examples are only some of the uses of the array types that follow. They can be modified or augmented to meet the particular needs of your project. We hope you will find them useful in providing a starting point for your next project.

## **ARRAY TIPS**

### **Modeling Arrays in Rooms**

The arrays included in this array guide have been developed to provide good coverage consistency throughout their specified range and balanced power response throughout their bandwidth. They are arranged to produce systems that are easy to rig and meet common coverage and performance needs.

To better understand how these arrays will work in a particular room, it is always preferred to model the room with EASE™, CATT acoustic or a similar type of predictive analysis tool. With these tools, array orientation and angles can be adjusted to optimize their use in the room. It is also a good way to determine how different elements of the system – multiple arrays and fills – combine to produce the complete solution.

EASE models for selected arrays are available on the JBL web site.

### **Optimizing Long-throw/Short-throw Loudspeaker Systems**

Many sound reinforcement applications call for loudspeakers to be arranged in a “long-throw/short-throw” configuration. To set-up a system like this, we recommend the following procedure:

- 1) Optimize the long-throw loudspeaker or system by itself (including separate LF). Store your optimized trace for later reference.
- 2) Optimize the short-throw (downfill) speaker by itself (with long-throw off).

Note: When using a full-range downfill device, use the same high-pass as the long-throw device. For a mid-high downfill device, use the same high-pass as the long-throw M/H high-pass. This is important since using different crossover points is detrimental to how the loudspeakers interact due to phase mismatches through the crossover regions.

- 3) Level balance the downfill on-axis measurement to match the long-throw loudspeaker's on-axis measurement. This should be done above 1 kHz, where both devices are clearly in the effective range of the waveguide. This may be done by matching traces on an analysis system such as Smaart™ or TEF™; or by simply using an SPL meter.
- 4) With both long-throw and short-throw sections on, analyze the downfill region again. The additional energy in this region, which resulted from the combined contribution of the long-throw device(s) and the downfill device, may be reduced by adding broad parametric EQ cuts to the downfill loudspeaker.

Note: The use of parametric filters introduces less phase shift between the long-throw and downfill devices than raising the high-pass crossover point of the downfill loudspeaker, ultimately creating a smoother transition between the devices.

5) If both loudspeakers are full-range devices, the addition of the down-fill device will affect the long-throw response by increasing level in the LF region. This is usually beneficial since the overall array will provide greater LF levels, producing a more balanced system and better LF polar characteristics. However, this means that the final low-frequency EQ must be done with all devices on.

Note: Below 250 Hz, treat all components of the array as one device with the same EQ filters.

This proven procedure provides very good, consistent results for this common arrangement.

## Signal Processing

Loudspeakers shown in this array guide are described in their most passive configuration; the number of DSP channels required and amplifier recommendations shown for each array type reflect this.

A separate DSP channel is required for the downfill loudspeakers. The low-frequency section of a three-way system or separate LF enclosure will require an additional DSP channel, as will the subwoofers.

DSP signals for each individual array may be paralleled symmetrically. For instance, where two loudspeakers are side by side horizontally, there is no benefit to providing independent DSP. Level differences may be done at the amplifier if required.

Loudspeaker DSP settings may be found on the JBL web site. For the crossover between the subwoofers and the low-frequency section, a 24 dB/octave L-R crossover slope on each side is recommended. Also, it is good practice to use as a minimum an 18 dB/octave high-pass on the system with the corner frequency somewhere between the –10dB and –3dB down point of the loudspeaker reproducing the lowest frequency. Refer to the loudspeaker specifications for this data.

## Low Frequency Pattern Control

Most of the arrays described in this guide have integral to them low-frequency devices that are arranged to provide improved directivity. No special DSP techniques are required to realize these benefits.

It is generally better to arrange LF devices vertically rather than horizontally, as the vertical arrangement tends to collapse the vertical polar pattern, which is beneficial in keeping energy off of the stage and projecting it into the room. Where it is important to limit the LF energy on the stage and to gain additional level and impact, look for solutions that stack two or more LF drivers vertically.

To further explore low-frequency arraying please refer to the following JBL white papers:

- 1) *Basic PD5322 and PD5122 Array Applications; Technical Notes Volume 1, Number 32. Applicable for PD6000 Series.*
- 2) *Forward Steered Arrays in Precision Directivity™ Speaker Systems; Technical Notes Volume 1, Number 28.*

- 3) *Loudspeaker Array Low-Frequency Pattern Control using Filtered Array Technology™*; JBL Professional Application Note.
- 4) *JBL Audio Engineering for Sound Reinforcement* by John Eargle and Chris Foreman (Hal Leonard Publications, 2002).

These papers describe some of the most popular and effective low-frequency arraying techniques for performance systems including:

- Frequency-shaded or Bipole arrays
- Gradient or Cardioid arrays
- Filtered Array Technology™ (FAT) arrays
- Forward Steered arrays

Each of these arrays may be realized using product from the AE™ and PD™ series of loudspeakers. For additional information on the use of these arrays please contact the JBL Application Support staff.

## Subwoofer Directional Control

Configuring subwoofer enclosures in vertical columns or spaced vertical arrays, as with any line source, will allow the user to achieve vertical pattern control to a lower frequency. The AE Series subwoofers can easily be used in such configurations with ample 10mm attachment points. A more common configuration for practical low frequency control, however, is to use multiple subwoofer enclosures in a cardioid configuration.

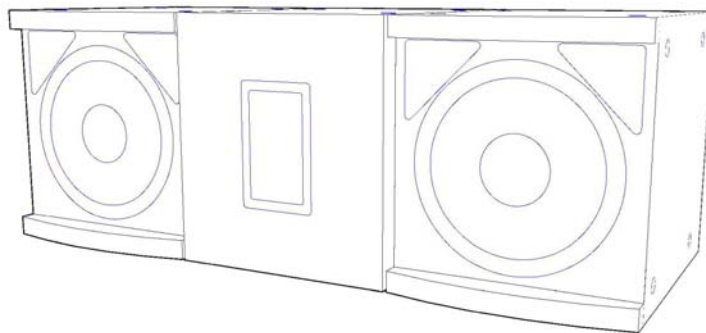


Figure 7: ASB6112 enclosures configured in a cardioid configuration.

Cardioid subwoofer arrays will typically exhibit 10-20dB of rear attenuation to better control subwoofer energy onto stage areas or boundary areas. The beneficial effects are tighter, more controlled subwoofer impact to the audience areas due to higher direct to reverberant ratios and less energy interacting with boundary conditions (walls).

## Planar Array Frames and Rigging Brackets

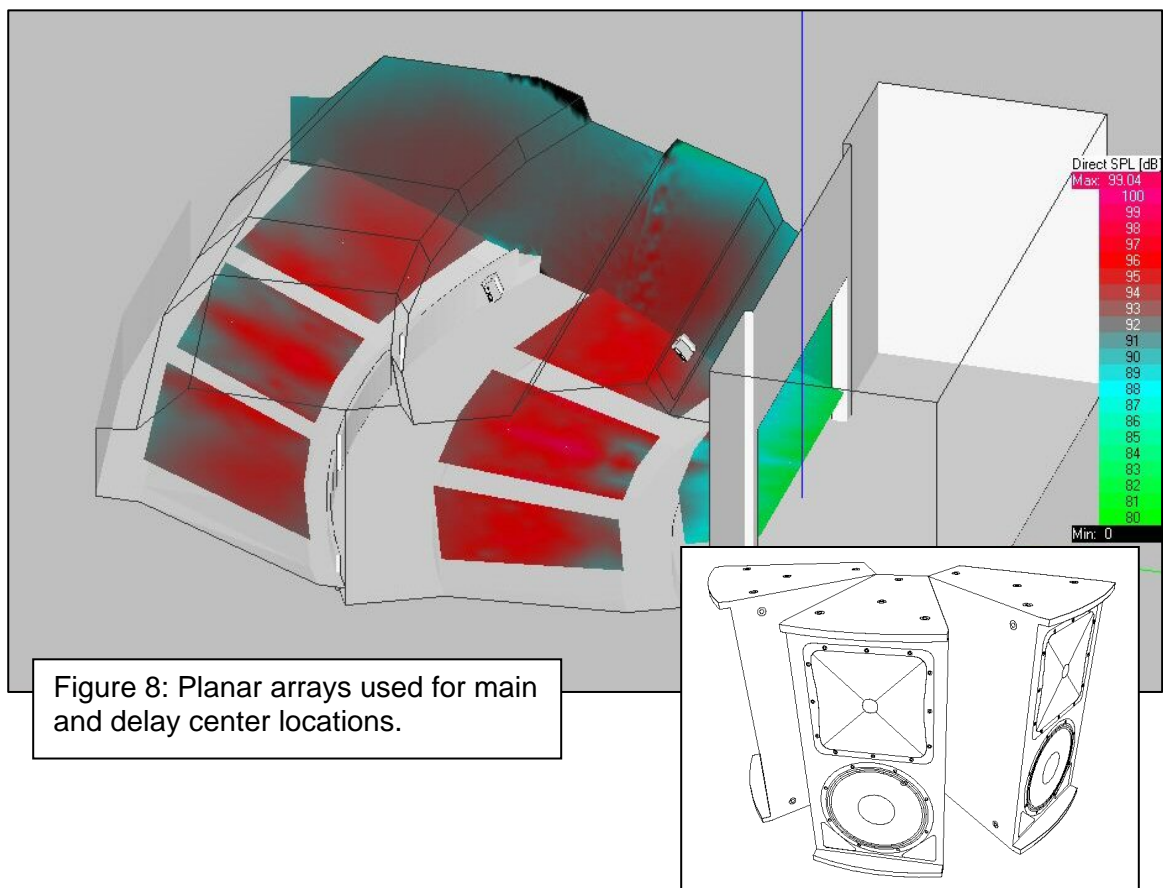
Planar Array Frames (PAFs) provide a pre-engineered solution to rig several of the arrays found in this guide. Please refer to the *AE Series Bracket and Array Frame Handbook* for more details.

When tilting an array that utilizes a PAF frame downward at angles greater than about 35 degrees, understand that the center section of the array will end up with more down-tilt than the outside sections. If this is undesirable, consider changing the rigging to a spherical array (see below), where each box is aimed down independently. Spherical arrays can require more complex rigging, but have the benefit of independent adjustment of speakers on each axis.

Often the top tier of a multi-tiered array is aimed downward together at a shallower angle and the downfill boxes are aimed independently below that. This is how the two-tiered arrays in this guide are shown.

## Planar Array and Spherical Array examples

The following 3-D modeling plots show the effect mentioned above where unwanted energy from the outer enclosures of a planar array is directed onto the side walls of a room (fig. 8). The rear delay cluster is also a planar array which exhibits the same problems. Planar arrays refer to those clusters that have a flat top and bottom array surface.



The second example shows the same three enclosures arranged in a *spherical* array with independent aiming capabilities (fig. 9). Note that the direct side wall energy is lessened with this array type which also uses *distributed* delay enclosures for the three rear audience areas. This distributed delay configuration will also offer better localization to the stage for the respective seating areas. *This is the preferred design direction.*

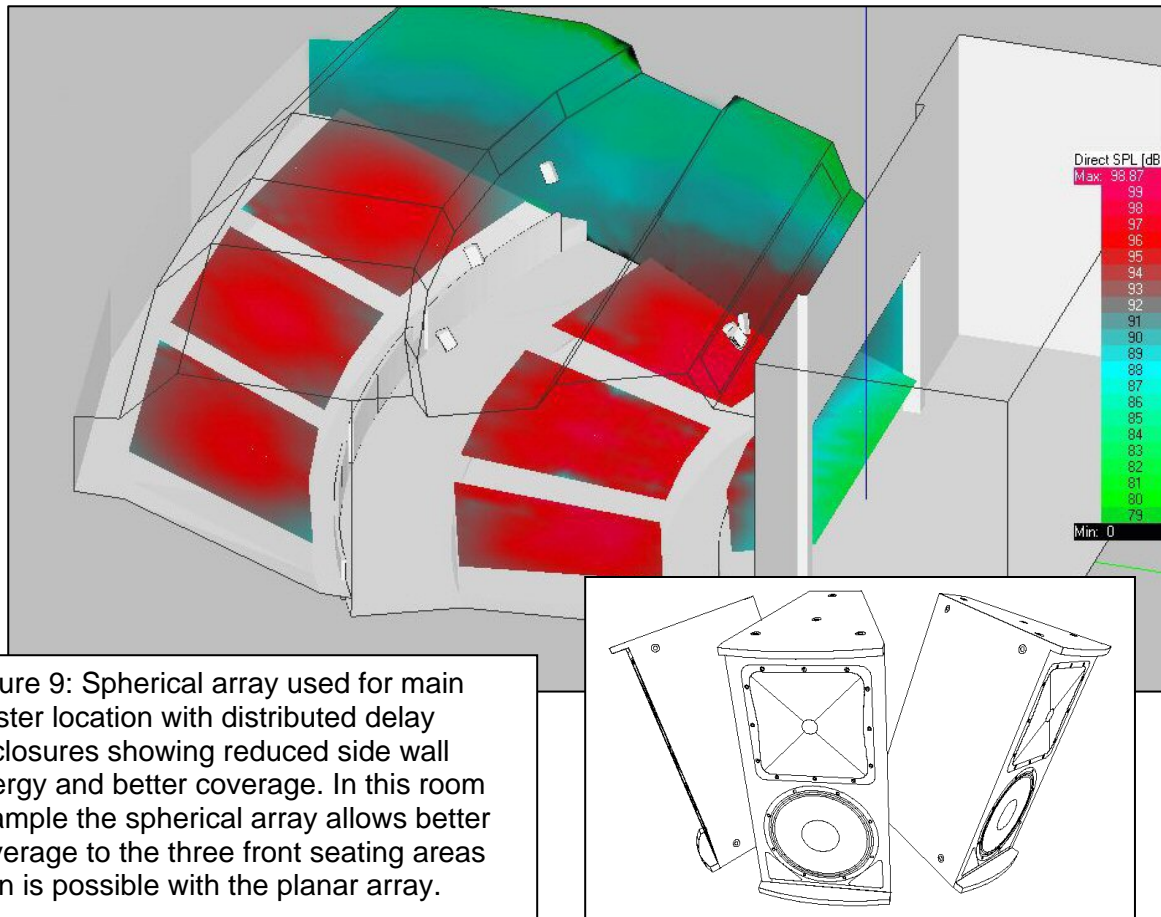


Figure 9: Spherical array used for main cluster location with distributed delay enclosures showing reduced side wall energy and better coverage. In this room example the spherical array allows better coverage to the three front seating areas than is possible with the planar array.

## **MORE INFORMATION**

For more information on designing loudspeaker system arrays, refer to JBL Audio Engineering for Sound Reinforcement by John Eargle and Chris Foreman (Hal Leonard Publications, 2002)

Additional system design information, including advanced design concepts, can be found at the "Technical Library" available on the JBL Professional website at

<http://www.jblpro.com/catalog/general/technicallibrary.aspx?CatID=27&Run=1>

For additional information on low frequency control refer to –

Basic PD5322 and PD5122 Array Applications; Technical Notes Volume 1, Number 32 and Forward Steered Arrays in Precision Directivity™ Speaker Systems; Technical Notes Volume 1, Number 28.

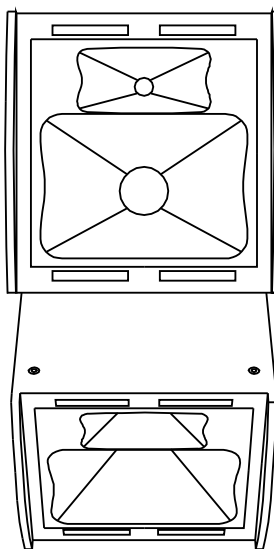
Information on amplifier recommendations found in this guide can be obtained at the Crown website: <http://www.crownaudio.com/>

Information on DSP hardware recommendations found in this guide can be obtained at the BSS Audio, Crown and dbx websites. All websites are accessible from: <http://jblpro.com/> .

# Array 1

## Two-element Vertical Array in Long-Throw/Short-Throw Configuration

Application Engineered 2-way Mid-High loudspeakers vertically splayed



### ARRAY OVERVIEW

- This array is a good choice for small to medium-sized rooms as part of a center cluster when augmented by an additional low frequency enclosure, a Left/Right, or as a delay system.

### Array Specifications

- Loudspeakers: (1) AM7200/64 + (1) AM7200/95 downfill
- Overall Coverage: 60°/90° horizontal x 85° vertical
- Downfill enclosure vertical splay angle: -50°
- Frequency range: 200 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): 133 dB-SPL cont. avg.
- Total Power Capacity: 700W
- Overall Dimensions: 45" H x 21.5" W x 34" D (1143 x 548 x 864mm)
- Total Loudspeaker Weight: 120 lbs. (54.5kg)

### Recommended Amplification:

- AM7200 x 2: 2 ch. 600W [Crown CTs1200]

### Recommended DSP:

- 2 channels required. [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

### Available Accessories

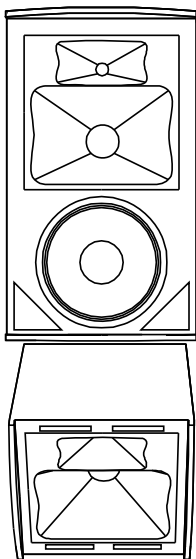
- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)



## Array 2

### Two-element Vertical Array in Long-Throw/Short-Throw Configuration

Application Engineered 3-way 15" and Mid-High loudspeakers oriented and splayed vertically



#### ARRAY OVERVIEW

- This array is a good choice for small to medium-sized rooms as part of a Left/Right or exploded cluster system. The configuration is particularly appropriate for use left and right of the proscenium opening for speech or speech + music program requirements.
- This system may be augmented with ground supported subwoofers. (e.g. ASB6128 or ASB7118)

#### Array Specifications

- Loudspeakers: (1) AM7315/64, (1) AM7200/95 downfill
- Overall Coverage: 60°/90° horizontal x 85° vertical
- Downfill enclosure vertical splay angle: -50°
- Frequency range: 38 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): LF: 125, MF/HF: 133 dB-SPL cont. avg
- Total Power Capacity: 1700W
- Overall Dimensions: 65.5" H x 22.1" W x 31" D (1664 x 562 x 788mm)
- Total Loudspeaker Weight: 161 lbs. (73kg)

#### Recommended Amplification:

- AM7315: LF: 1 ch. 1250W [Crown CTs3000], AM7315 M/H: 1 ch. 600W [Crown CTs1200]  
AM7200: 1 ch. 600W [Crown CTs1200]

#### Recommended DSP:

- 3 channels required. [Crown PIP-USP3, dbx Driverack, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

#### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

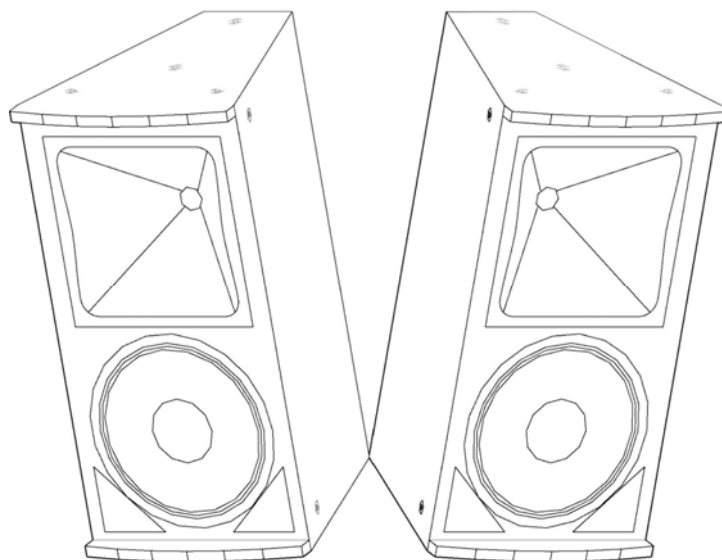
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# Array 3

## Two-element Spherical Array

Application Engineered 2-way 12" loudspeakers horizontally splayed

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### ARRAY OVERVIEW

- This array is a good solution for a simple Center or Left/Right cluster in small to medium-sized rooms for both speech and speech + music systems.

### Array Specifications

- Loudspeakers: (2) AM7212/64  
*Medium Power Solution: (2) AM5212/64*
- Overall Coverage: 110° horizontal x 40° vertical
- Enclosure splay angle: 60°
- Frequency range: 40 Hz – 19 kHz (55 Hz – 20 kHz for *Medium Power*)
- Maximum SPL (1 meter equivalent): 130 dB-SPL continuous average (126 dB-SPL for *Medium Power*)
- Total Power Capacity: 1200W (700W for *Medium Power*)
- Overall Dimensions: 32.6" H x 42.7" W x 27.6" D (829 x 1085 x 702mm) @ 18° downtilt
- Total Loudspeaker Weight: 102 lbs. (47kg) (90 lbs (41kg) for *Medium Power*)

### Recommended Amplification:

- AM7212/64 x 2: 2 ch. 1250W [Crown CTs3000]  
*Medium Power Solution: AM5212/64 x 2: 2 ch. 600W [Crown CTs1200] or 1 ch. 1000W [Crown CTs2000]*

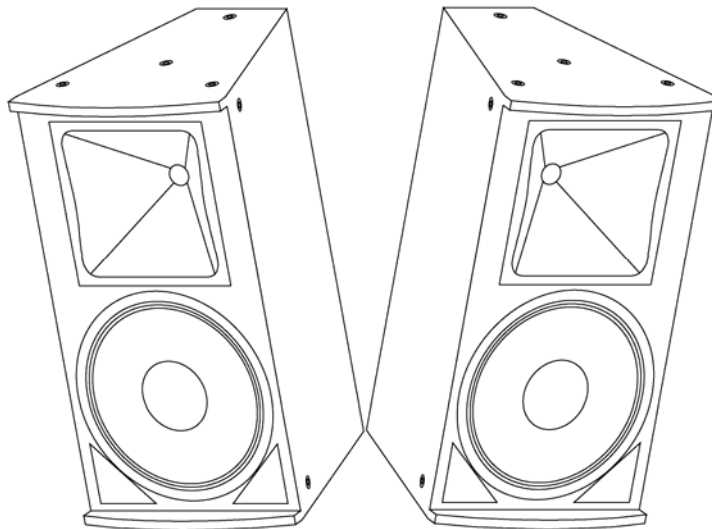
### Recommended DSP:

- 1 channel required (1 channel for *Medium Power*). [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Application Engineered 2-way 15" loudspeakers horizontally splayed



### ARRAY OVERVIEW

- This array is a good solution for a simple Center or Left/Right cluster in small to medium-sized rooms for both speech and speech + music systems.

### Array Specifications

- Loudspeakers: (2) AM7215/64  
*Medium Power Solution: (2) AM5215/64*
- Overall Coverage: 110° horizontal x 40° vertical
- Enclosure splay angle: 60°
- Frequency range: 35 Hz – 19 kHz (*40 Hz – 20 kHz for Medium Power*)
- Maximum SPL (1 meter equivalent): 133 dB-SPL continuous average (*130 dB-SPL for Medium Power*)
- Total Power Capacity: 1200W (*700W for Medium Power*)
- Overall Dimensions: 35.5" H x 47.9" W x 29.6" D (902 x 1217 x 752mm) @ 18° downtilt
- Total Loudspeaker Weight: 120 lbs. (55kg) (*110 lbs (50kg) for Medium Power*)

### Recommended Amplification:

- AM7215/64 x 2: 2 ch. 1250W [Crown CTs3000]  
*Medium Power Solution: 2 ch. 600W [Crown CTs1200] or 1 ch. 1000W [Crown CTs2000]*

### Recommended DSP:

- 1 channel required (*1 channel for Medium Power*). [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

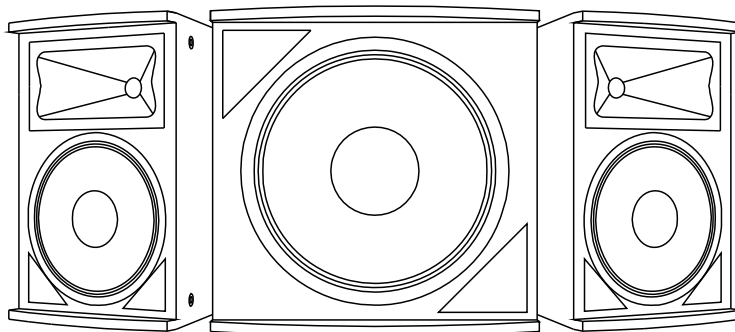
### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

# Array 5

## Two-element Horizontal Array with Subwoofer

Application Engineered 2-way 12" loudspeakers horizontally splayed plus subwoofer



### ARRAY OVERVIEW

- This array is a great choice for small to medium-sized rooms as a center cluster.
- Provides a cost-effective center cluster solution with excellent coverage at medium SPL levels for speech and fullrange program material.

### Array Specifications

- Loudspeakers: (2) AC2212/64, (1) ASB6118 Subwoofer
- Overall Coverage: 110° horizontal x 40° vertical
- Splay angle between AC2212/64 enclosures: 50°
- Frequency range: 28 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): Sub: 129, LF/HF: 126 dB-SPL continuous average
- Total Power Capacity: 1700W
- Overall Dimensions: 22" H x 54.5" W x 33" D (559 x 1368 x 817mm)
- Total Loudspeaker Weight: 144 lbs. (65.3kg)

### Recommended Amplification:

- AC2212/64 x 2: 1 ch. 1000W [Crown CTs2000], ASB6118: 1 ch. 1000W [Crown CTs2000]

### Recommended DSP:

- 2 channels required. [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

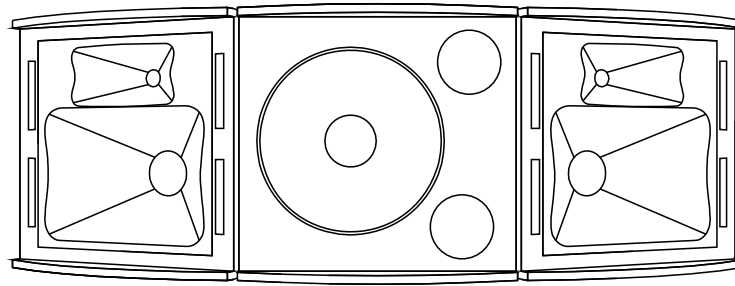
### Available Accessories

- PAF-1 Planar Array Frame Kit

## Array 6

### Three-element Horizontal Array in a Wide Coverage Configuration

Application Engineered Mid/High loudspeakers horizontally splayed with Low Frequency Enclosure



#### ARRAY OVERVIEW

- This array is a very good choice for small to medium-large rooms as a center cluster speech system offering very high intelligibility, yet maintaining a low vertical profile.
- Provides a cost-effective center cluster solution for good coverage and full-range program.

#### Array Specifications

- Loudspeakers: (2) AM7200/64, (1) AL7115 Low Frequency Enclosure
- Overall Coverage: 110° horizontal x 55° vertical
- Splay angle between AM7200/64 enclosures: 60°
- Frequency range: 40 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): LF: 129, MF/HF: 133 dB-SPL continuous average
- Total Power Capacity: 1700W
- Overall Dimensions: 22.1" H x 63.75" W x 31" D (562 x 1620 x 788 mm)
- Total Loudspeaker Weight: 177 lbs. (84 kg)

#### Recommended Amplification:

- AM7200/64 x 2: 1 ch. 1000W [Crown CTs2000], AL7115: 1 ch. 1000W [Crown CTs2000]

#### Recommended DSP:

- 2 channels required [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

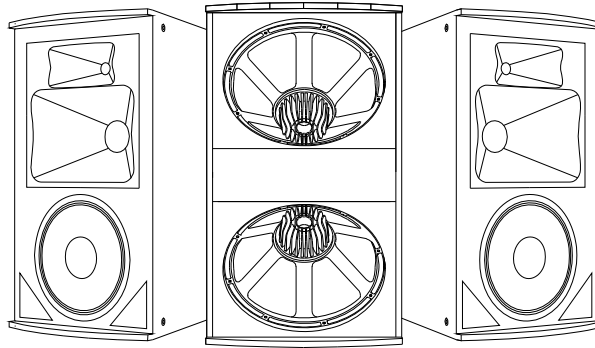
#### Available Accessories:

- PAF-3 Planar Array Frame kit

# Array 7

## Two-element Horizontal Array with Subwoofer

Application Engineered 3-way 15" loudspeakers horizontally splayed plus Subwoofer



### ARRAY OVERVIEW

- This array is a good choice for medium to large rooms as a center cluster or as part of a Left/Right or exploded cluster system.
- Full bandwidth 4-way system is excellent for high-impact musical program requirements.
- Flown subwoofer rigged with available PAF-2K array frame allows for an easy to install, pre-engineered system.

### Array Specifications

- Loudspeakers: (2) AM7315/64, (1) ASB6128V Subwoofer
- Overall Coverage: 110° horizontal x 40° vertical
- Splay angle between AM7315/64 enclosures: 60°
- Frequency range: 22 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): Sub: 132, LF: 131, MF/HF: 133 dB-SPL continuous average.
- Total Power Capacity: 5100W
- Overall Dimensions: 38.1" H. x 74.25" W. x 48" D. (968 x 1886 x 1220 mm)
- Total Loudspeaker Weight: 400 lbs. (182 kg)

### Recommended Amplification:

- AM7315 LF x 2: 2 ch. 1250W [Crown CTs3000], AM7315 M/H x 2: 2 ch. 600W [Crown CTs1200]  
ASB6128V: 2 ch. 1500W [Crown CTs3000] or 1 ch. 3500w [Crown I-T9000HD]

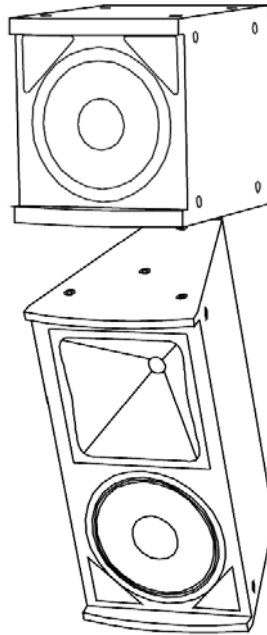
### Recommended DSP:

- 3 channels required [Crown PIP-USP3, Crown I-Tech, dbx Driverack 260, BSS FDS-334, BSS SoundWeb]

### Available Accessories:

- PAF-2K Planar Array Frame kit

Application Engineered 2-way 12" or 15" loudspeakers  
with ASB6112 or ASB6115 Subwoofer



### ARRAY OVERVIEW

- These configurations are a good choice for small to medium rooms as a center or left/right element where full frequency response and high impact is required from minimal cubic footage.
- Full bandwidth 3-way system is excellent for high-impact musical program requirements.
- 12" and 15" subwoofer models have identical width as their matched full range enclosures for minimal visual impact.
- Additional downfiring low-mid frequency attenuation will be achieved by increasing the subwoofer lowpass frequency to 200Hz.

### Array Specifications

- Loudspeakers: (1) AM5215 or AM7215 with (1) ASB6115 Subwoofer or (1) AM5212 or AM7212 with (1) ASB6112 Subwoofer.
- Overall Coverage: 60°, 90°, or 120° horizontal. Vertical coverage varies with model.
- Frequency range: 32 or 35 Hz – 19 kHz depending on subwoofer model.
- Maximum SPL (1 meter equivalent): Sub: 132, LF: 126-128, HF: 131-133 dB-SPL continuous average
- Overall Dimensions: 44.1" to 49.8" H x 14.5 to 16.5" W x 19" to 23.5" D (1121 x 369 x 483 mm to 1266 x 420 x 596mm) *Note: Actual height will vary on suspension hardware.*
- Total Loudspeaker Weight: 81 to 105.5 lbs. (36.5 to 47.8 kg)

### Recommended Amplification:

- AM7215 or 7212 x 2: 1 ch. 1000W [Crown CTs2000]
- *Medium Power Solution: AM5215 or 5212: 1 ch. 600W [Crown CTs1200]*
- ASB6115 or ASB6112: 1 ch. 1500W [Crown CTs3000]

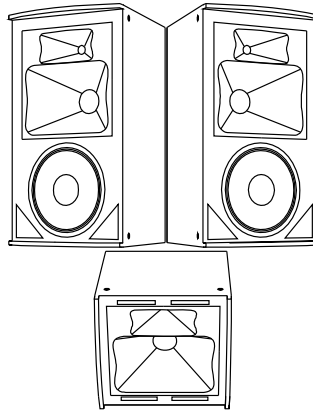
### Recommended DSP:

- 2 channels required. [Crown PIP-USP3, Crown I-Tech, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

# Array 10

## Two-element Horizontal Array with Downfill

Application Engineered 3-way 15" loudspeakers horizontally splayed with vertically splayed Application Engineered mid-high downfill



### ARRAY OVERVIEW

- This array is a good choice for medium-sized rooms as a center cluster or as part of a Left/Right or exploded cluster system.
- High-powered three-way system provides a full-bandwidth music system.
- Array may be augmented with flown or ground stacked ASB6128V subwoofers (see Array D1).

### Array Specifications

- Loudspeakers: (2) AM7315/64, (1) AM7200/95 downfill.
- Overall Coverage: 110° horizontal x 85° vertical
- Splay angle between AM7315/64 enclosures: 60°
- Downfill enclosure vertical splay angle: -50°
- Frequency range: 38 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): LF: 131, MF/HF: 133 dB-SPL continuous average
- Total Power Capacity: 3050W
- Overall Dimensions: 65" H x 52" W x 29.5" D (1651 x 1321 x 750 mm)
- Total Loudspeaker Weight: 262 lbs. (119 kg)

### Recommended Amplification:

- AM7315 LF x 2: 2 ch. 1250W [Crown CTs3000], AM7315 M/H x 2: 2 ch. 600W [Crown CTs1200]  
AM7200/95: 1 ch. 600W [Crown CTs1200]

### Recommended DSP:

- 3 channels required [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS SoundWeb]

### Available Accessories:

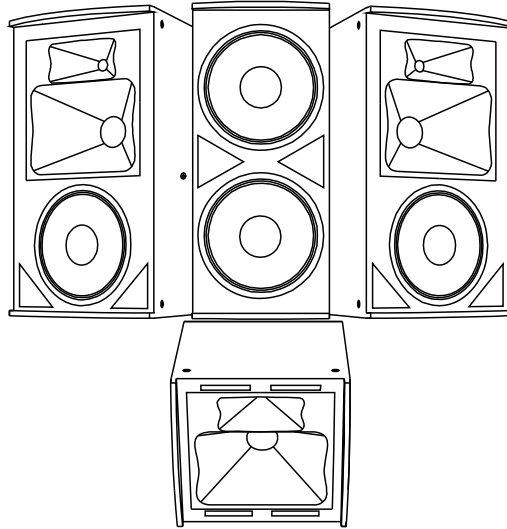
- 3 pc. Eye-bolt kit (part # 229-00009-01)



## Array 12

## Two-element Horizontal Array with Additional LF and Downfill

Application Engineered loudspeakers horizontally splayed with vertically splayed Application Engineered mid-high downfill



### ARRAY OVERVIEW

- This array is a good choice for medium-sized rooms as a center cluster or as part of a Left/Right or exploded cluster system.
- The additional dual 15" low frequency enclosure increases bass output and impact for improved musical performance and improves vertical directivity in the low-frequency bandpass.
- Array may be augmented with ground stacked subwoofers such as the ASB6128V.

### Array Specifications

- Loudspeakers: (2) AM7315/64, (1) ASB6125, (1) AM7200/95 downfill
- Overall Coverage: 110° horizontal x 85° vertical
- Splay angle between AM7315/64 enclosures: 60°
- Downfill enclosure vertical splay angle: -50°
- Frequency range: 40 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): LF: 136, MF/HF: 133 dB-SPL continuous average
- Total Power Capacity: 5050W
- Overall Dimensions: 65" H x 65.25" W x 32" D (1651 x 1658 x 813 mm)
- Total Loudspeaker Weight: 343 lbs. (156 kg)

### Recommended Amplification:

- AM7315 LF x 2: 2 ch. 1250W [Crown CTs3000], AM7315 M/H x 2: 2 ch. 600W [Crown CTs1200], ASB6125 2 ch. 1500W [Crown CTs3000] or 1 ch. 2000w [Crown I-T5000HD], AM7200/95: 1 ch. 600W [Crown CTs1200]

### Recommended DSP:

- 3 channels required. [Crown PIP-USP3, Crown I-Tech, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

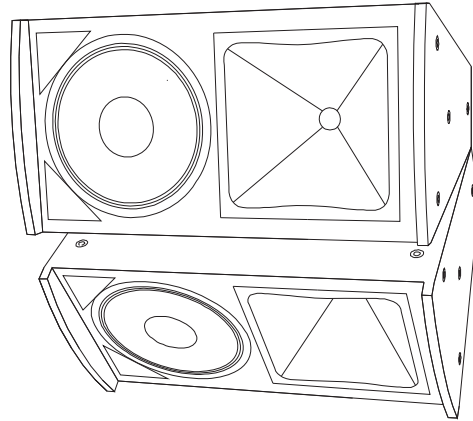
### Available Accessories:

- 3 pc. Eye-bolt kit (part # 229-00009-01)

# Array 13

## Two-element Vertical Array in a Long-Throw/Short-Throw Configuration

Application Engineered 2-way 12" loudspeakers horizontally configured and vertically splayed



### ARRAY OVERVIEW

- This low-profile array is a good choice for smaller L/R or exploded clusters.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- H.F. waveguides are rotated 90° from standard. A 60° x 40° waveguide is typically used for the upper enclosure and a 90° x 50° waveguide for the lower; however 60° x 40° waveguides for both positions may better match some seating section geometries in fan shaped rooms.

### Array Specifications

- Loudspeakers: (1) AM7212/64, (1) AM7212/95  
*Medium Power Solution: (1) AM5212/64, (1) AM5212/95*
- Overall Coverage: 60°/90° horizontal x 100° vertical
- Vertical box-to-box splay angle: 40° (60°x40° over 90°x50°), 35° (60°x40° over 60°x40°)
- Frequency range: 40 Hz – 19 kHz (*55 Hz – 20 kHz for Medium Power*)
- Maximum SPL (1 meter equivalent): 130 dB-SPL cont. avg. (*126 dB-SPL for Medium Power*)
- Total Power Capacity: 1200W (*700W for Medium Power*)
- Overall Dimensions: 29.5" H x 28" W x 22" D (750 x 712 x 559mm)
- Total Loudspeaker Weight: 102lbs. (47kg) (*90 lbs (41kg) for Medium Power Solution*)

### Recommended Amplification:

- AM7212 x 2: 2 ch. 1000W [Crown CTs2000]
- *Medium Power Solution: AM5212 x 2: 2 ch. 600W [Crown CTs1200]*

### Recommended DSP:

- 2 channels required (*2 channels for Medium Power*). [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

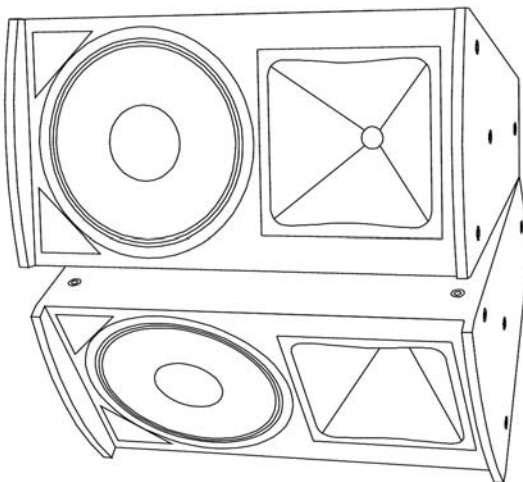
### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

# Array 14

## Two-element Vertical Array in a Long-Throw/Short-Throw Configuration

Application Engineered 2-way 15" loudspeakers horizontally configured and vertically splayed



### ARRAY OVERVIEW

- This low-profile array is a good choice for smaller L/R or exploded clusters in speech + music systems.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- H.F. waveguides are rotated 90° from standard. A 60° x 40° waveguide is typically used for the upper enclosure and a 90° x 50° waveguide for the lower; however 60° x 40° waveguides for both positions may better match some seating section geometries in fan shaped rooms.

### Array Specifications

- Loudspeakers: (1) AM7215/64, (1) AM7215/95  
*Medium Power Solution: (1) AM5215/64, (1) AM215/95*
- Overall Coverage: 60°/90° horizontal x 85° vertical
- Vertical box-to-box splay angle: 40° (60°x40° over 90°x50°), 35° (60°x40° over 60°x40°)
- Frequency response: 35 Hz – 19 kHz (40 Hz – 20 kHz for Medium Power)
- Maximum SPL (1 meter equivalent): 133 dB-SPL cont. avg. (130 dB-SPL for Medium Power)
- Total Power Capacity: 1200W (700W for Medium Power)
- Overall Dimensions: 33" H x 31" W x 26" D (839 x 787 x 660mm)
- Total Loudspeaker Weight: 120lbs. (55kg) (110 lbs (50kg) for Medium Power Solution)

### Recommended Amplification:

- AM7215 x 2: 2 ch. 1000W [Crown CTs2000]
- *Medium Power Solution: AM5215 x 2: 2 ch. 600W [Crown CTs1200]*

### Recommended DSP:

- 2 channels required (2 channels for Medium Power). [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

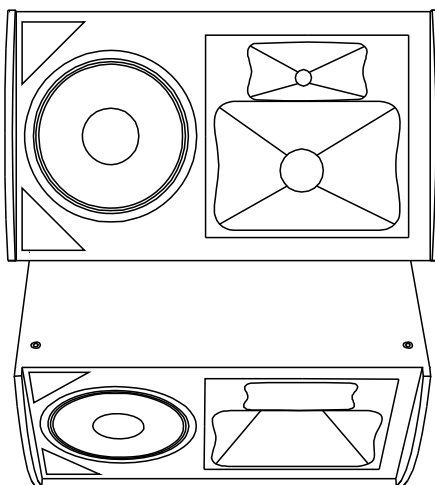
### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

# Array 15

## Two-element Vertical Array in a Long-Throw/Short-Throw Configuration

Application Engineered 3-way 15" loudspeakers horizontally configured and vertically splayed



### ARRAY OVERVIEW

- This low-profile array is a good choice for mid to large L/R or exploded clusters in speech + music systems.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- H.F. waveguides are rotated 90° from standard. The upper enclosure contains a 60° x 40° waveguide and the lower a 90° x 50° waveguide.

### Array Specifications

- Loudspeakers: (1) AM7315/64, (1) AM7315/95
- Overall Coverage: 60°/90° horizontal x 90° vertical
- Vertical splay angle: 55°
- Frequency response: 38 Hz – 19 kHz
- Maximum SPL (1 meter equivalent): LF: 131, MF/HF: 133 dB-SPL continuous average
- Total Power Capacity: 2700W
- Overall Dimensions: 44.5" H x 38.1" W x 34" D (1131 x 968 x 864mm)
- Total Loudspeaker Weight: 202lbs. (92kg)

### Recommended Amplification:

- AM7315 LF x 2: 2 ch. 1250W [Crown CTs3000], AM6315 M/H x 2: 2 ch. 600W [Crown CTs1200]

### Recommended DSP:

- 4 channels required [Crown PIP-USP3, dbx Driverack 260, BSS FDS-334, BSS FDS-366, BSS SoundWeb]

### Available Accessories

- 3 pc. M10 x 35mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

## WEATHER RESISTANT Configurations for AE, PD & VLA Series

JBL offers two standard levels of weather resistance for AE, PD and VLA Series loudspeakers. **WRC** is intended for outdoor placement where the loudspeaker will be sheltered from direct exposure to the elements. **WRX** is best suited for direct exposure to the elements or any extreme environment such as tropical climate, beach areas, or other locations with high or low temperature extremes, salt air, high humidity or rapid change in temperature.

**Model Numbering** – WR designation is a suffix to the standard model number. For example: **AM5215/95-WRC** or **AM5215/95-WRX**.

MODEL SUFFIX	-WRC	-WRX
	Covered/Protected Outdoor Areas	Direct Exposure or Extreme Environment
ENVIRONMENTAL RATINGS	IP55 per IEC 529	IP56 per IEC 529

### ENCLOSURE

Covering and Finish	<b>Exterior:</b> 0.060" (1.5mm) thick DuraFlex™ coating <b>Interior:</b> Wood sealer	Exterior: Course Texture 0.060 "(1.5mm) thick Fiberglass, all corners wrapped with fiberglass cloth for maximum structural reinforcement. <b>Interior:</b> Gelcoat sealed
Dimensions	LARGER than standard AE Series cabinets. Standard AE Series brackets do NOT fit these cabinets. Visit the JBL Professional website for drawings at: <a href="http://www.jblpro.com/catalog/support/getfile.aspx?doctype=3&amp;docid=1970">http://www.jblpro.com/catalog/support/getfile.aspx?doctype=3&amp;docid=1970</a> Or, contact JBL Professional for dimensional information.	
Standard Color	LIGHT GRAY, similar to RAL 7035 and Pantone PMS428C (contact JBL Professional for availability)	
Optional Colors	JBL Black & JBL AE White (contact JBL Professional for availability)	
Custom Colors	Contact JBL Professional for colors, pricing, and availability	
Horn Orientation	Rotating the horn in the field is not recommended. Default horn orientation is wider horizontal coverage, narrower vertical coverage with vertical cabinet orientation, same as standard versions. To order with horn rotated, add "-H" (Ex: AM5215/95-WRX-H)	
Enclosure	Exterior grade plywood, exterior grade glues, fully captive baffle	
Hardware	Stainless steel and heavily zinc-plated hardware throughout	

### GRILLE

Shape	Flat front
Grille Material	Perforated stainless steel, vinyl dipped, light gray color
Grille Backing	Black open cell foam over stainless steel vapor-barrier

### INPUT & NETWORK

Input Connection & Cable	Sealed gland nut, permanently attached 20 ft (6 m) captive jacketed cable, unterminated. <u>AE Compact</u> models are equipped with a 6 ft (2 m) captive jacketed cable, un-terminated. Cable rated for permanent outdoor installation: UV, ozone & water resistant. Custom cable lengths are available, contact JBL Pro for details. Cable Diameters: (14/2 .350" - .380"); (14/4 .350" - .380"); (14/6 .400" - .450")
Network Mode	<b>Comes standard in "most passive" mode:</b> bi-amp on normally bi-amp/tri-amp models (i.e., AM73xx models), full passive on normally passive/bi-amp models. Mode is NOT re-configurable in the field. To order in bi-amp or tri-amp mode add -BA or -TA suffix respectively, as applicable (Ex.: AM7215/95-WRC-BA or AM7315/64-WRX-TA)

### COMPONENT TREATMENT

Transducers	Cones treated for water resistance, metal parts urethane-coated
Passive Crossover Network	Conformal urethane-coating

**Delivery** – WRC and WRX are **Build-to-Order** products, not stocked. Lead time (from when the order is cleared by the JBL Credit Department to shipment from JBL Professional) is typically 6 to 8 weeks. Additional time is required for custom color or deviations (contact the JBL Professional for pricing and availability).

**Custom Extra-Cost Options:** (contact JBL Professional for pricing and availability)

- Custom cable lengths
- Custom color options (other than standard GRAY)

# Painting AE and PD Series Loudspeaker Enclosures

JBL AE and PD Series loudspeakers are available in black, white or unfinished. When ordering, the default color is always black. White is signified by a –WH suffix on the model number. Unfinished models are signified with a –UF suffix and are delivered “paint ready”. JBL recommends that for custom color installations, the unfinished versions (-UF) should be ordered and painted as required. If however, you wish to paint an enclosure over the JBL “DuraFlex” finish, the instructions below should be used as a general guide.

DuraFlex is a multi-layer finish. The top aliphatic layer provides a surface to which most paints bond.

*Note: Some JBL portable loudspeaker models do not include a top aliphatic coating – these models are not paintable. All standard AE and PD Series loudspeakers do include a top aliphatic coating and are paintable.*

## **1) SURFACE PREPARATION**

**Important:**

Do NOT sand or scuff the surface! This could remove the top aliphatic coating which is required for good paint adhesion.

Prepare the surface by cleaning and wiping dust with a damp cloth. It may be necessary to use a mild household cleaner to remove grease. If so, be sure to rinse off the detergent and give plenty of time for the surface to dry completely. Avoid using a cloth that will deteriorate over the textured surface.

## **2) PRIMING THE SURFACE**

Some paints may adhere well directly. Starting with a primer is highly recommended for ensuring proper long-term adhesion. Use an oil-based primer, not a water-based primer.

## **3) PAINT SELECTION**

**With Primer** – If you use a primer, select a paint that works well over that primer.

**Without Primer** – If you are applying paint directly without using a primer, oil-based paint is recommended. Water-based paint does not adhere as well. Avoid epoxy-based paints as they do not stretch adequately for the expansion and contraction of a wooden loudspeaker cabinet and can crack.

## **4) MASKING THE BAFFLE**

It is often desirable to leave the baffle (behind the grille) black.

## **5) PAINT APPLICATION**

Apply as many coats as is required. Paint may be applied by rolling, brushing or spraying.

## **6) GRILLE**

Care must be taken when painting the grille to avoid clogging the grille backing material (open cell foam on some models and grille cloth on other models). Clogging the pores will degrade the performance of the loudspeaker.

**Painting Grille with Backing Attached** – It can be very difficult to paint the grille with the backing attached without clogging the grille backing material.

**Removing the Grille Backing** – It is a good idea to remove the grille’s backing (foam or cloth) and reattach it after painting. Spraying is perhaps the best way to paint the grille.

It is highly recommended to leave the grille backing unpainted. If you must add some color to the backing, give it a very quick spray dusting of the color, making sure not to clog the pores in the backing material.

Reattach the backing securely using 3M Super 77 or similar spray adhesive, sprayed onto the back of the metal grille (spray only a minimal amount onto the backing because otherwise the backing could tend to pick up dust from the air).

If the backing is damaged in the removal process it will be necessary to order a replacement – either from JBL or from a third-party foam or grille cloth provider -- if indeed a backing is required for your application.

## Painting Weather Resistant AE and PD Models

Most AE and PD models are available in two levels of weather resistant models. Weather resistant models are signified by a –WRC or –WRX suffix to the standard product model.

### Important:

Simply painting a non-weather-resistant speaker is NOT acceptable protection for outdoor use.

**Internal Protection** – The WRC and WRX models are constructed with necessary additional internal protection, including: full internal surface sealant to protect the wood from the inside, special corrosion-resistant internal hardware, weather protection for the cones, protective coating for the metal parts on the back of the drivers, protective coating on crossover network, waterproof glues and special grille backing that breaks up driving rain. For speakers that will be used outdoors, always start with a WRC (DuraFlex finish) or WRX (fiberglass finish) as the base model to insure proper construction for outdoor use.

**Painting WRC Enclosures** -- Models with the WRC-level of weather resistant are coated with an extra-thick DuraFlex finish. Follow the same instructions in the sections above, which apply to all models with DuraFlex finish.

**Painting WRX Enclosures** – WRX-level weather resistant models have a fiberglass finish. Follow standard procedures for painting over fiberglass.

For further information on weather resistant JBL models and the technical definition of the –WRC and –WRX process go to the “WEATHER RESISTANT Configurations for AE and PD Series” section available in this guide and also online at the JBL Professional Website: [www.jblpro.com](http://www.jblpro.com).

# AE/PD Series Connector Pin-Out Guide

**Connectors:** All models contain one (1) Neutrik Speakon® connector (either NL4 or NL8, specified below) AND one (1) set of terminal strips. Terminal strips are marked with same pinout labels as below (1+ / 1-, etc). Speakons and terminal connections are in parallel with each other and can be used for loop-through purposes.

<u>Models</u>	<u>Connector Type &amp; Pinouts</u>	<u>Crossover Mode</u>															
<u>PD Series and AM High-Power 3-Ways</u>		(bi-amp/tri-amp selectable)															
AM7315/xx	PD6322/xx	<table><tr><th>NL8</th><th>Bi-Amp</th><th>Tri-Amp</th></tr><tr><td>1+ / 1-</td><td>Low</td><td>Low</td></tr><tr><td>2+ / 2-</td><td>Mid-High</td><td>Mid</td></tr><tr><td>3+ / 3-</td><td>n/c</td><td>High</td></tr><tr><td>4+ / 4-</td><td>(Thru)</td><td>(Thru)</td></tr></table>	NL8	Bi-Amp	Tri-Amp	1+ / 1-	Low	Low	2+ / 2-	Mid-High	Mid	3+ / 3-	n/c	High	4+ / 4-	(Thru)	(Thru)
NL8	Bi-Amp	Tri-Amp															
1+ / 1-	Low	Low															
2+ / 2-	Mid-High	Mid															
3+ / 3-	n/c	High															
4+ / 4-	(Thru)	(Thru)															
<u>PD Series and AM Mid-Highs</u>		(passive/bi-amp selectable)															
AM7200/xx	PD6200/xx	<table><tr><th>NL4</th><th>Passive</th><th>Bi-Amp</th></tr><tr><td>1+ / 1-</td><td>Mid-High</td><td>Mid</td></tr><tr><td>2+ / 2-</td><td>n/c</td><td>High</td></tr></table>	NL4	Passive	Bi-Amp	1+ / 1-	Mid-High	Mid	2+ / 2-	n/c	High						
NL4	Passive	Bi-Amp															
1+ / 1-	Mid-High	Mid															
2+ / 2-	n/c	High															
<u>PD Series and AM 2-Ways and AC 2-Ways</u>		(passive/bi-amp selectable)															
AM7215/xx	PD6212/xx	<table><tr><th>NL4</th><th>Passive</th><th>Bi-Amp</th></tr><tr><td>1+ / 1-</td><td>Full Range</td><td>Low</td></tr><tr><td>2+ / 2-</td><td>n/c</td><td>High</td></tr></table>	NL4	Passive	Bi-Amp	1+ / 1-	Full Range	Low	2+ / 2-	n/c	High						
NL4	Passive	Bi-Amp															
1+ / 1-	Full Range	Low															
2+ / 2-	n/c	High															
AM7212/xx																	
AM5215/xx																	
AM5212/xx																	
AC2215/xx																	
AC2212/xx																	
<u>PD 5122 and AL, ASB &amp; ASH Single-Driver Models</u>																	
AL6115	PD5122	<table><tr><th>NL4</th><th>Discreet</th></tr><tr><td>1+ / 1-</td><td>LF</td></tr><tr><td>2+ / 2-</td><td>(Thru)</td></tr></table>	NL4	Discreet	1+ / 1-	LF	2+ / 2-	(Thru)									
NL4	Discreet																
1+ / 1-	LF																
2+ / 2-	(Thru)																
ASB6112																	
ASB6115																	
ASB6118																	
ASB7118																	
ASH6118																	
<u>PD 5125 and AL &amp; ASB Dual-Driver Models</u>		(parallel/discrete selectable)															
AL6125	PD5125	<table><tr><th>NL4</th><th>Parallel</th><th>Discrete</th></tr><tr><td>1+ / 1-</td><td>LF1 &amp; LF 2</td><td>LF 1</td></tr><tr><td>2+ / 2-</td><td>n/c</td><td>LF 2</td></tr></table>	NL4	Parallel	Discrete	1+ / 1-	LF1 & LF 2	LF 1	2+ / 2-	n/c	LF 2						
NL4	Parallel	Discrete															
1+ / 1-	LF1 & LF 2	LF 1															
2+ / 2-	n/c	LF 2															
ASB4128																	
ASB6125																	
ASB6128																	
ASB6128V																	
ASB7128																	





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